

ABSTRACT

A light detecting element 1. The element 1 includes an element formation layer 22 which contains a well region 31. A surface electrode 25 is formed on the layer 22 through an insulating layer 24. The region 31 contains an electron holding region 32. The region 32 contains a hole holding region 33. The layer 24 contains a control electrode 26 facing the region 33 through the layer 24. Electrons and holes are generated at the layer 22. There are two selected states. In one state, by controlling each electric potential applied to the electrodes 25, 26, electrons are gathered at the region 32, while holes are held at the region 33. In another state, recombination is stimulated between the electrons and the holes. After the recombination, the remaining electrons are picked out as received light output.